CHESAPEAKE BAY: A RESTORATION IN PROGRESS

Identifying critical problems & seeking partnership solutions

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KSS Meeting Smithsonian Institution
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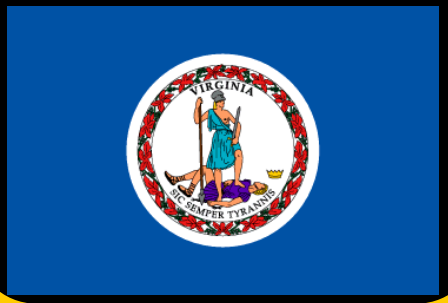
Chesapeake Bay Restoration Leadership

Governor of MD

Governor of VA



Governor of PA

Mayor of DC

EPA Administrator

Executive Council

Chair of Chesapeake Bay Commission

How does CBC fit in?

Briefing

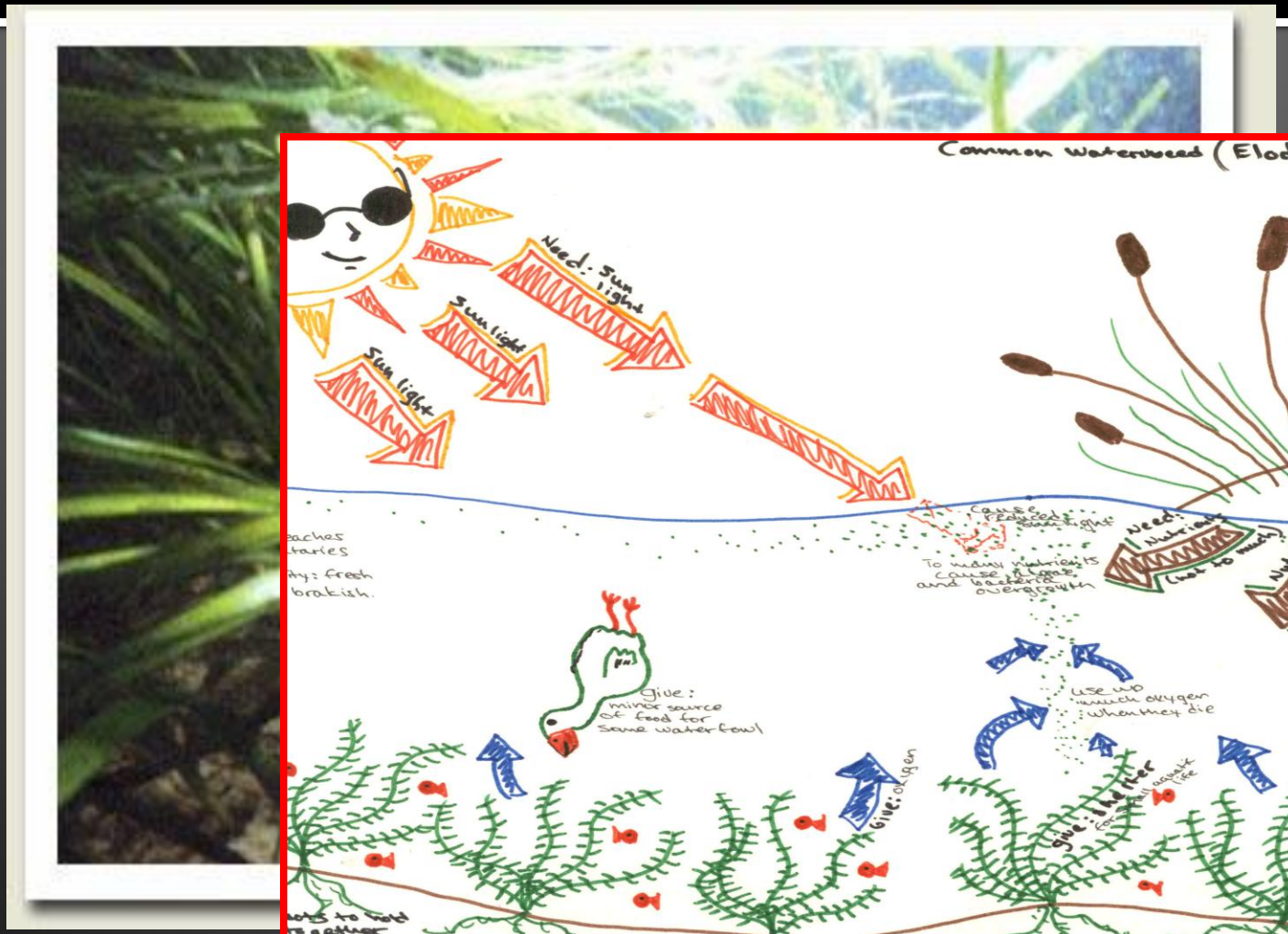
1. Why is the Bay so special?
2. Why is the Bay difficult to restore?
3. What are the current major challenges to restoration?
4. How can KSS help?

First ask yourself,

✓The Chesapeake Bay is vast!

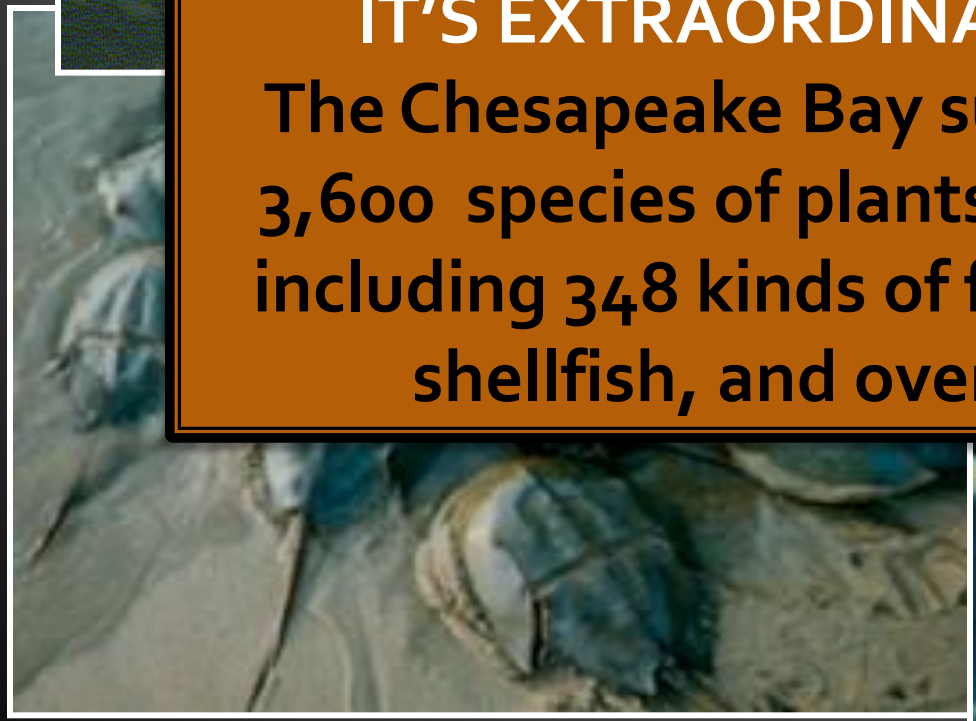
- "Largest, most productive estuary" on earth.
- 64,000 square mile watershed
- 150 rivers
- 11,684 miles of shoreline (Bay and its tidal tributaries)
- 100,000 miles of rivers, creeks and streams

✓ It's shallow!


Common Waterweed (Elodea, Canad
Need: Sun light
Sun light
Sun light
Need: Nutrients
Nutrients
give:
minor source
of food for
some waterfowl
use up
much oxygen
when they die
give: shelter
give: oxygen
prefer: loam

IT'S EXTRAORDINARILY DIVERSE!

The Chesapeake Bay supports more than 3,600 species of plants, fish and animals, including 348 kinds of finfish, 173 kinds of shellfish, and over 2,700 plants.



✓ It's got fish, shellfish and waterfowl!

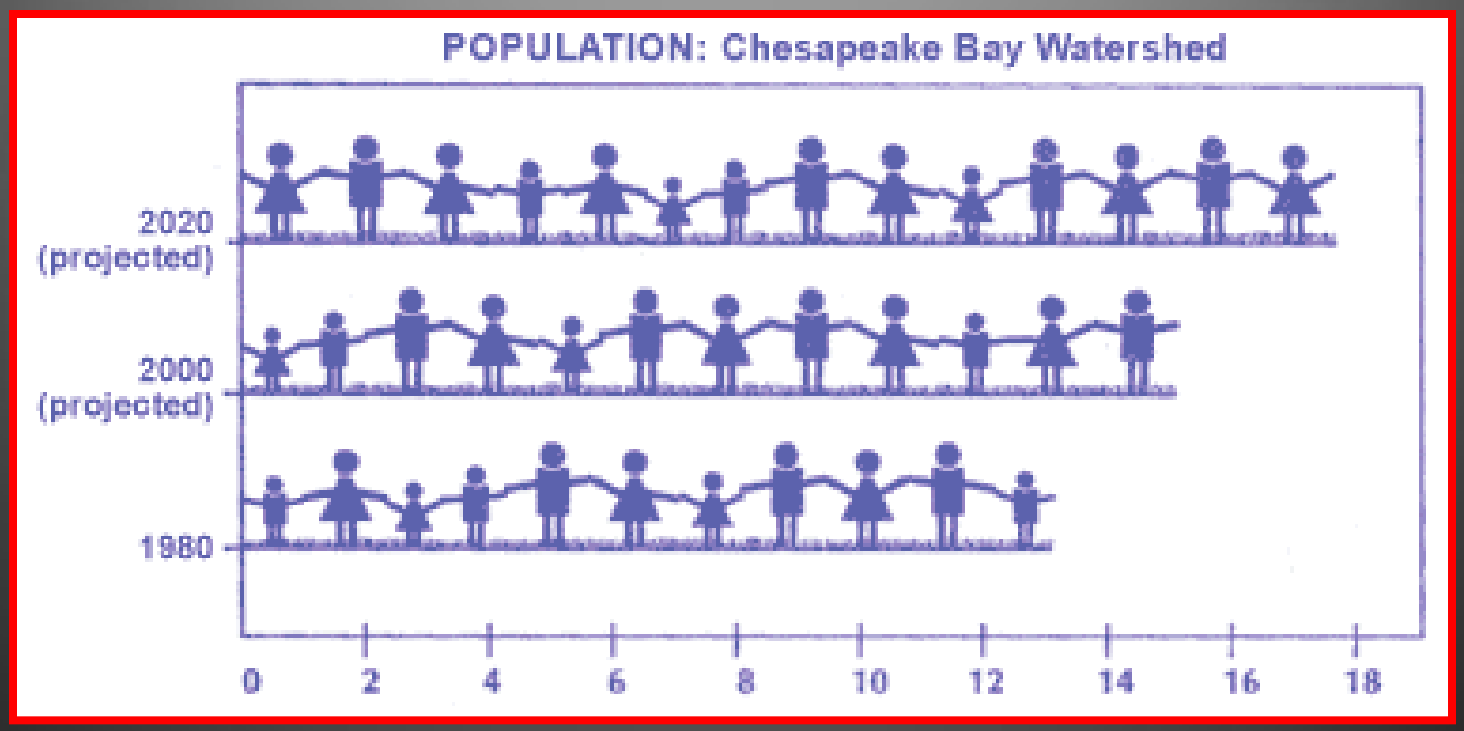
Atlantic Migratory Bird Flyway

Now ask yourself,

COMPLICATION: It's waters are salt, fresh and everything in between !

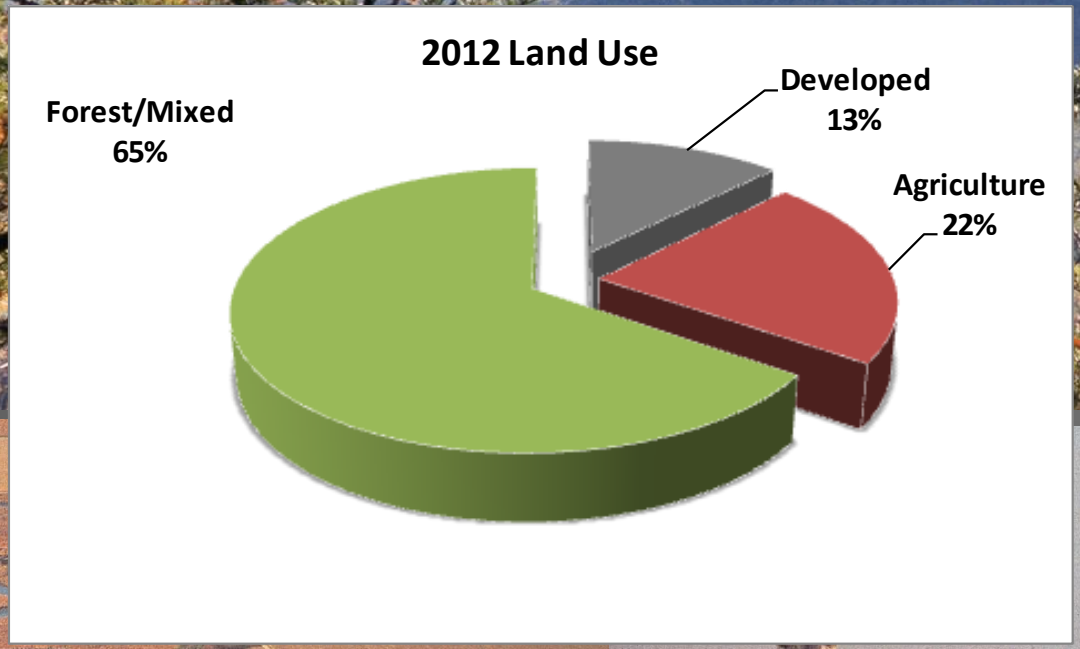
- About 50% of the water is salt water from the Atlantic Ocean.
- The other half drains into the Bay from an enormous 64,000 square mile watershed.
- 50% of fresh water is from Susquehanna River – 19 % is from Potomac River.

COMPLICATION:
It's home to a lot of people!



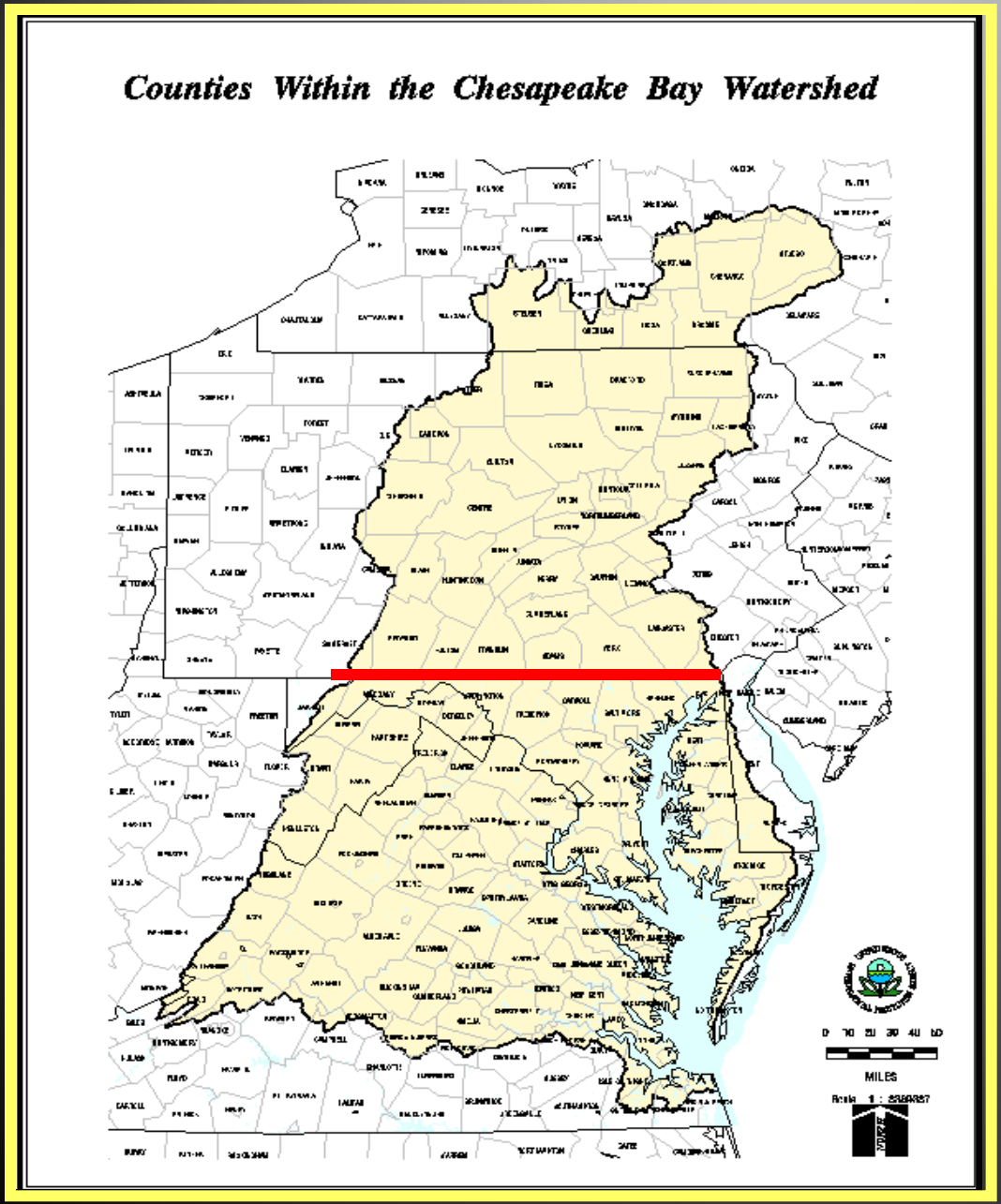
COMPLICATION:

Sprawl means each household has a greater impact



COMPLICATION:

Nearly half the landscape is "disturbed"



COMPLICATION:

The Bay watershed government structure is complex!

COMPLICATION: We import corn and beans, export the animals, and keep the manure.

CONCENTRATED LIVESTOCK

- 1.1 B Chickens
- 3.3 M Cows/Cattle
- 3.2 M Pigs

Compared to 17 million people

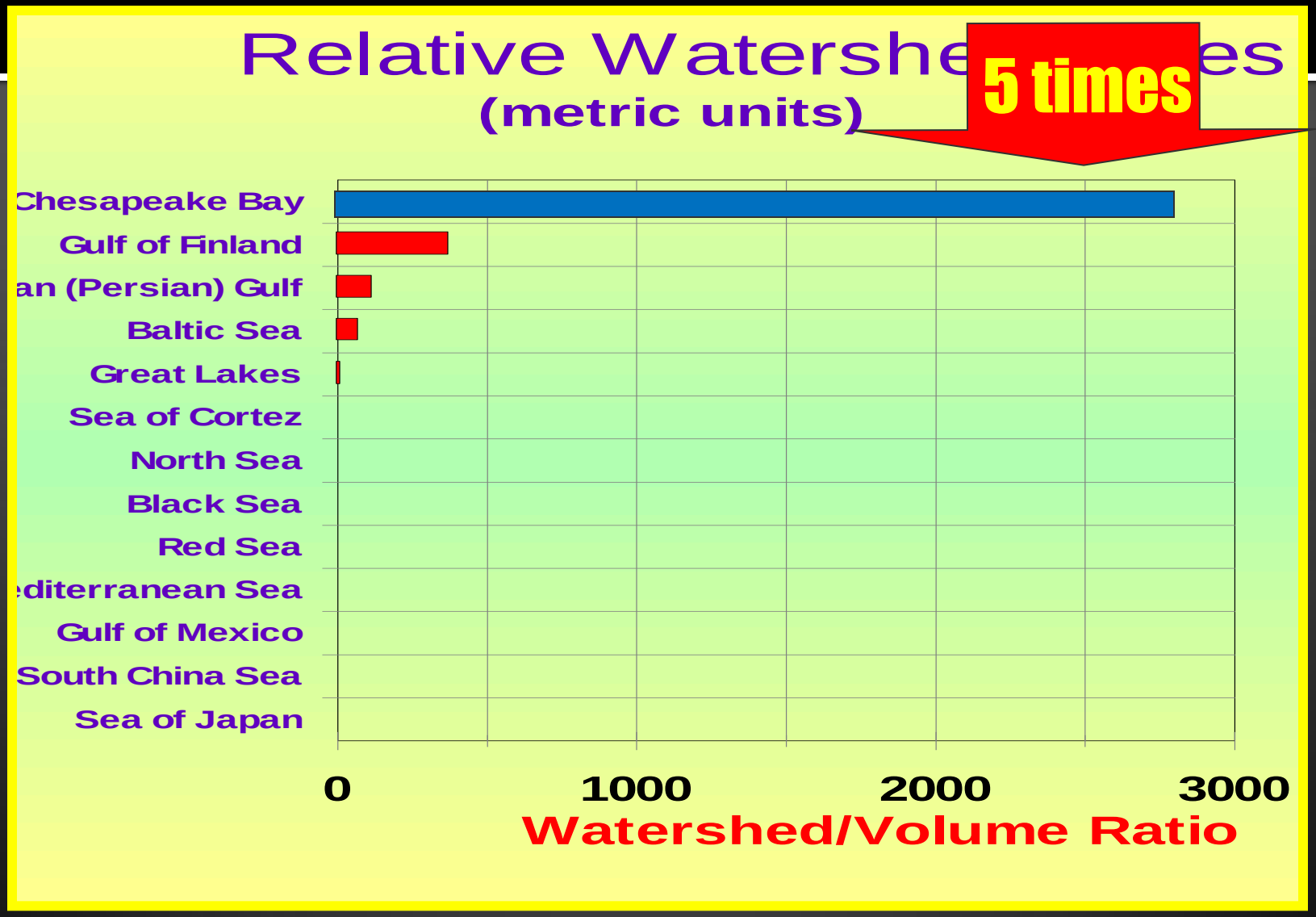
Source: CSREES: Mid Atlantic Water Quality Program

✓ COMPLICATION: It's amazingly shallow!

Coastal Sea	Mean Depth	Volume	Watershed Area
	m	cu. km	sq. km
Sea of Japan	1,752	713,000	349,528
South China Sea	1,060	3,907,000	3,223,870
Gulf of Mexico	1,512	2,332,000	5,836,494
Mediterranean Sea	1,500	1,738,000	5,480,000
Red Sea	558	251,000	883,189
Black Sea	1,150	530,000	2,528,884
North Sea	91	155,000	885,306
Sea of Cortez	818	145,000	1,454,775
Great Lakes	35	22,809	510,160
Baltic Sea	558	21,721	1,721,233
Arabian (Persian) Gulf	40	10,000	1,248,506
Gulf of Finland	37	1,098	419,200
Chesapeake Bay	6	70	166,400

data courtesy R. Costanza and J. Bartholomew

Lots of land influences very little water!



COMPLICATION:

Its flushing is restricted!

Finally , let's examine:

Where are the current major challenges and what are the next big steps?

1960s

2025

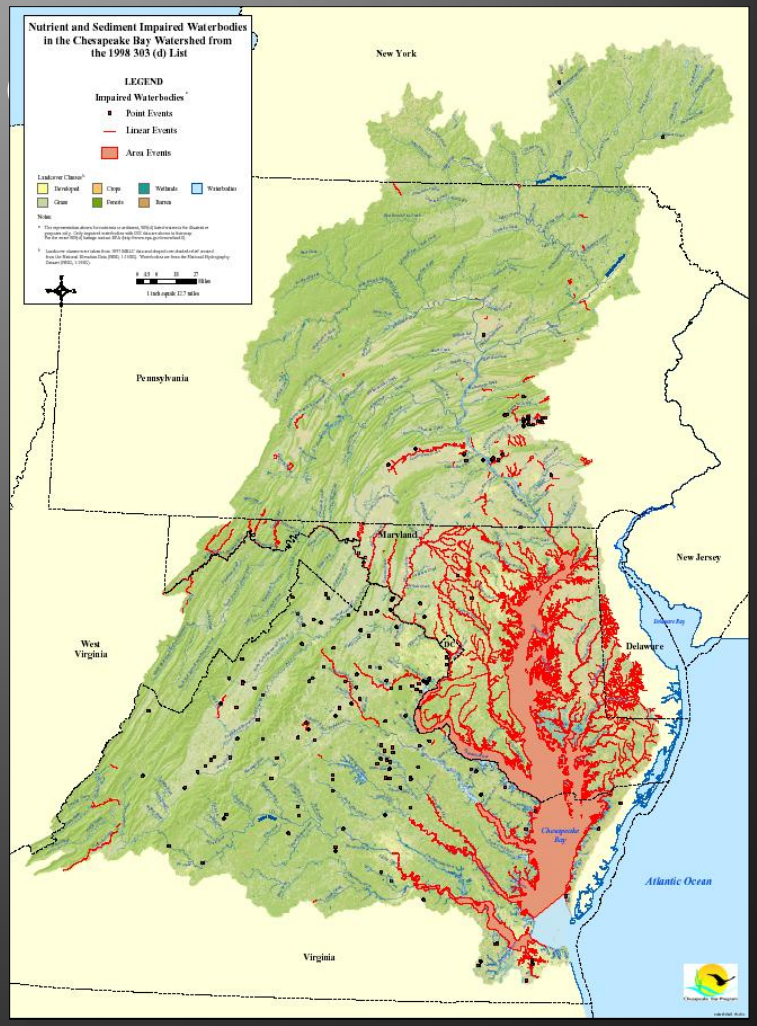
The Chesapeake Bay Restoration : A 50-Year History with a future

•1960s-70s	Visible decline in Bay resources
•1967	Chesapeake Bay Foundation established
•1976-1982	EPA conducts 5-year Bay study
•1980	Chesapeake Bay Commission established
•1983	**First Bay Agreement** - Bay Program created
•1987	**Second Bay Agreement** – WQ Goals
•1992	Amendments to Agreement – Tributary Strategies
•2000	**Third Bay Agreement** – Precursor to TMDL
•2008	Water Quality Impairments Acknowledged
•2010	Chesapeake Bay **TMDL** established
•2013	**Fourth Bay Agreement?** – Early in TMDL
•2017	60% of TMDL implemented
•2025	TMDL practices fully implemented

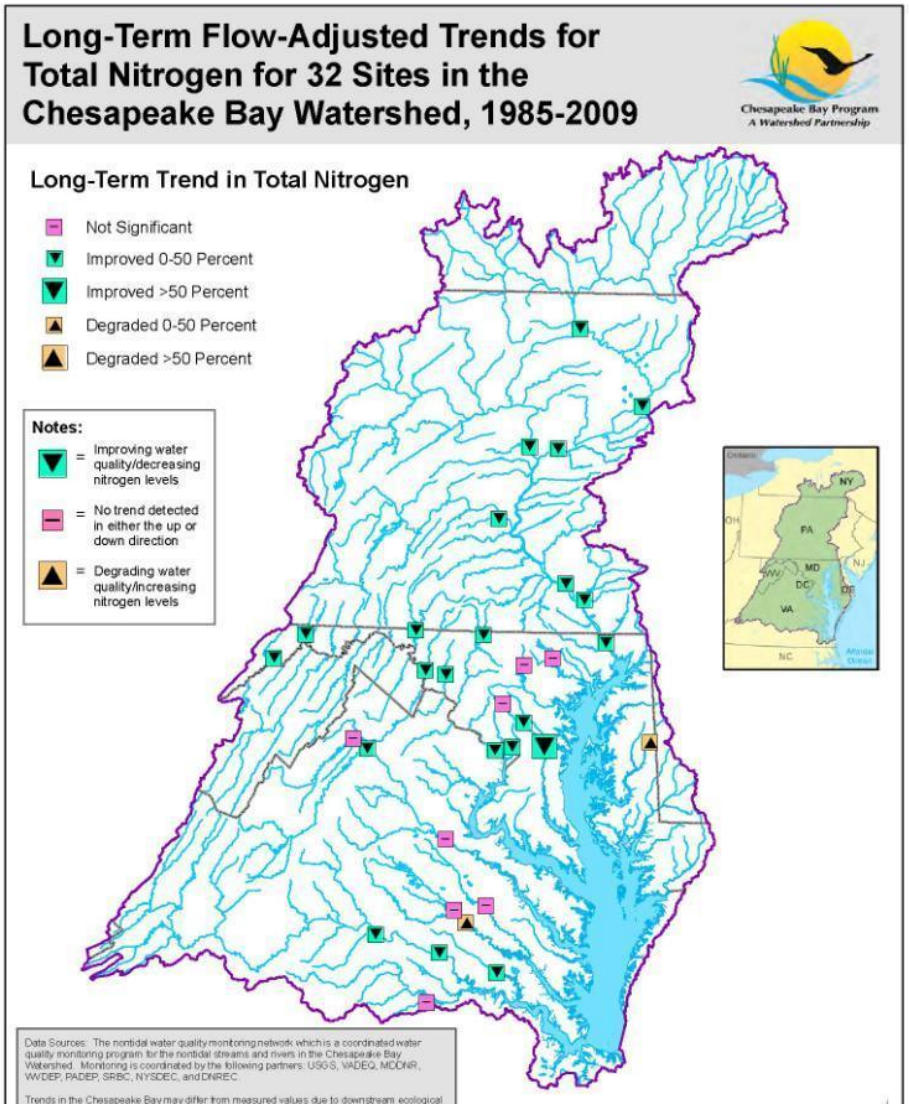
Still,

The Chesapeake Bay is *Impaired*

- 90% of its tidal waters do n
  meet WQ Standards
  based on designated uses.
- *N, P and Sediment*
- Under the federal Clean
  Water Act, a **TMDL**
  must be developed.



Trends are in the Right Direction

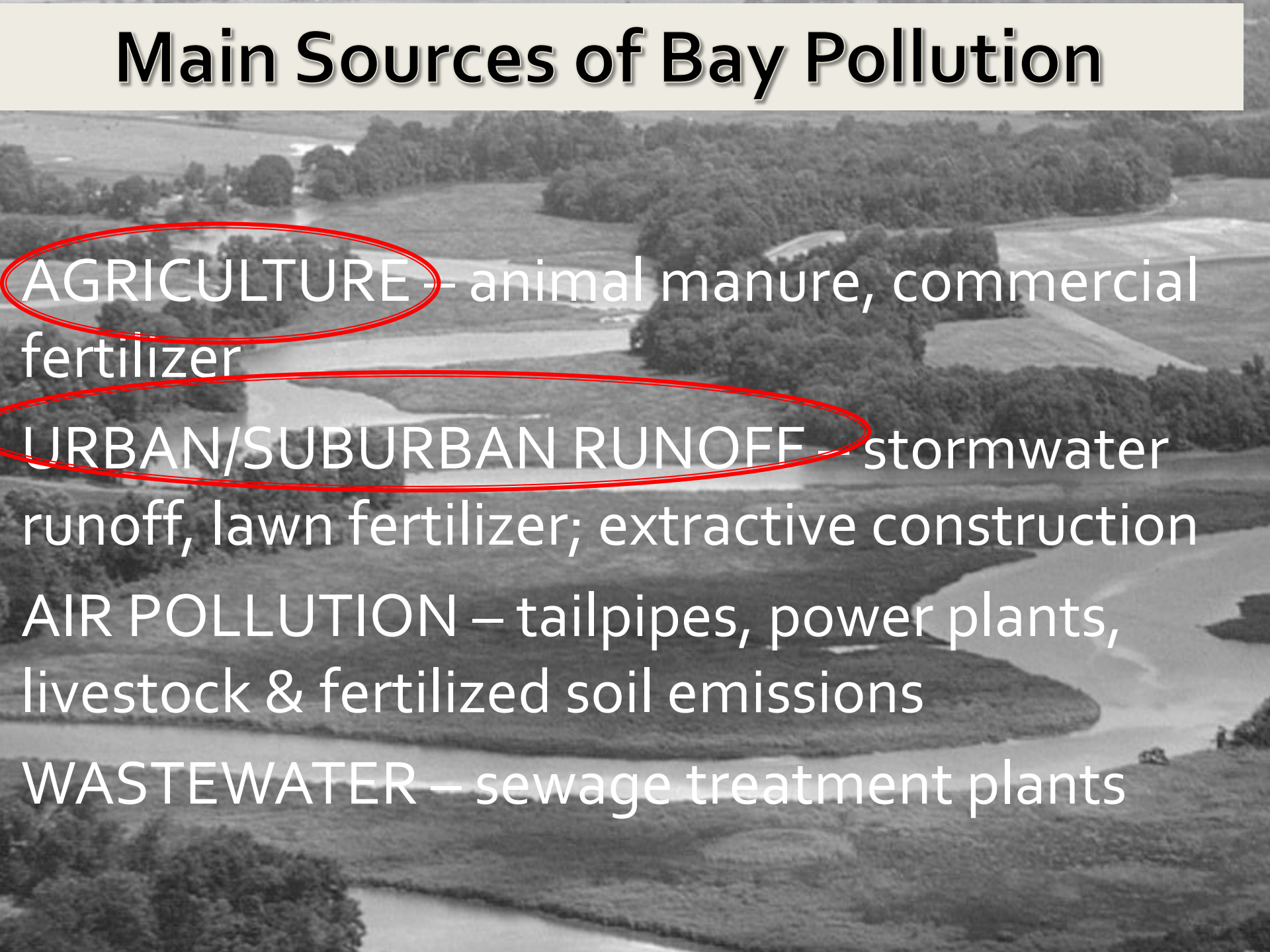


BUT

Without proper precautions, these trends could be overwhelmed by growth…

Growth in people &
Growth in livestock

Main Sources of Bay Pollution



AGRICULTURE -- animal manure, commercial fertilizer

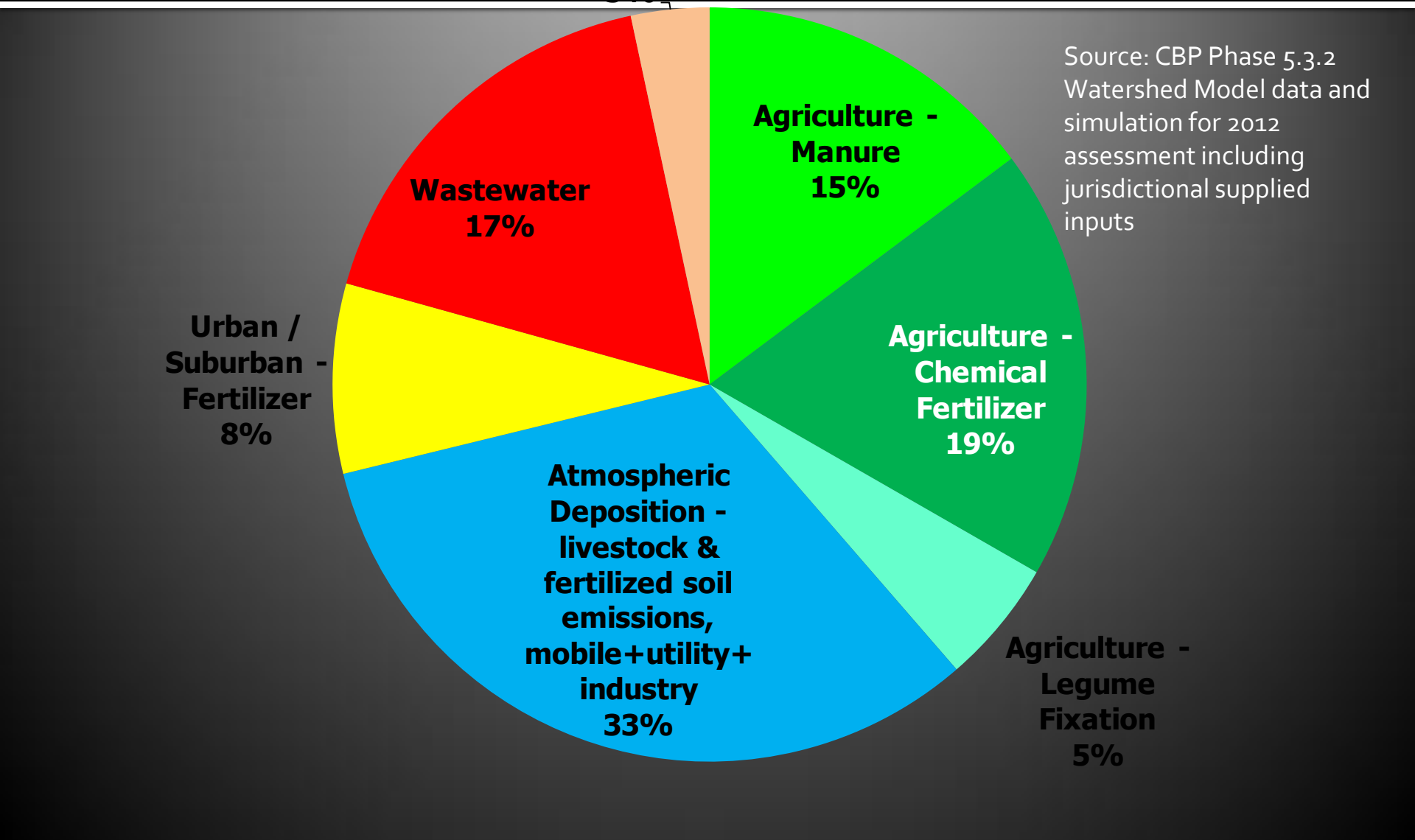
URBAN/SUBURBAN RUNOFF -- stormwater runoff, lawn fertilizer; extractive construction

AIR POLLUTION – tailpipes, power plants, livestock & fertilized soil emissions

WASTEWATER – sewage treatment plants

Nitrogen Loads to the Chesapeake Bay

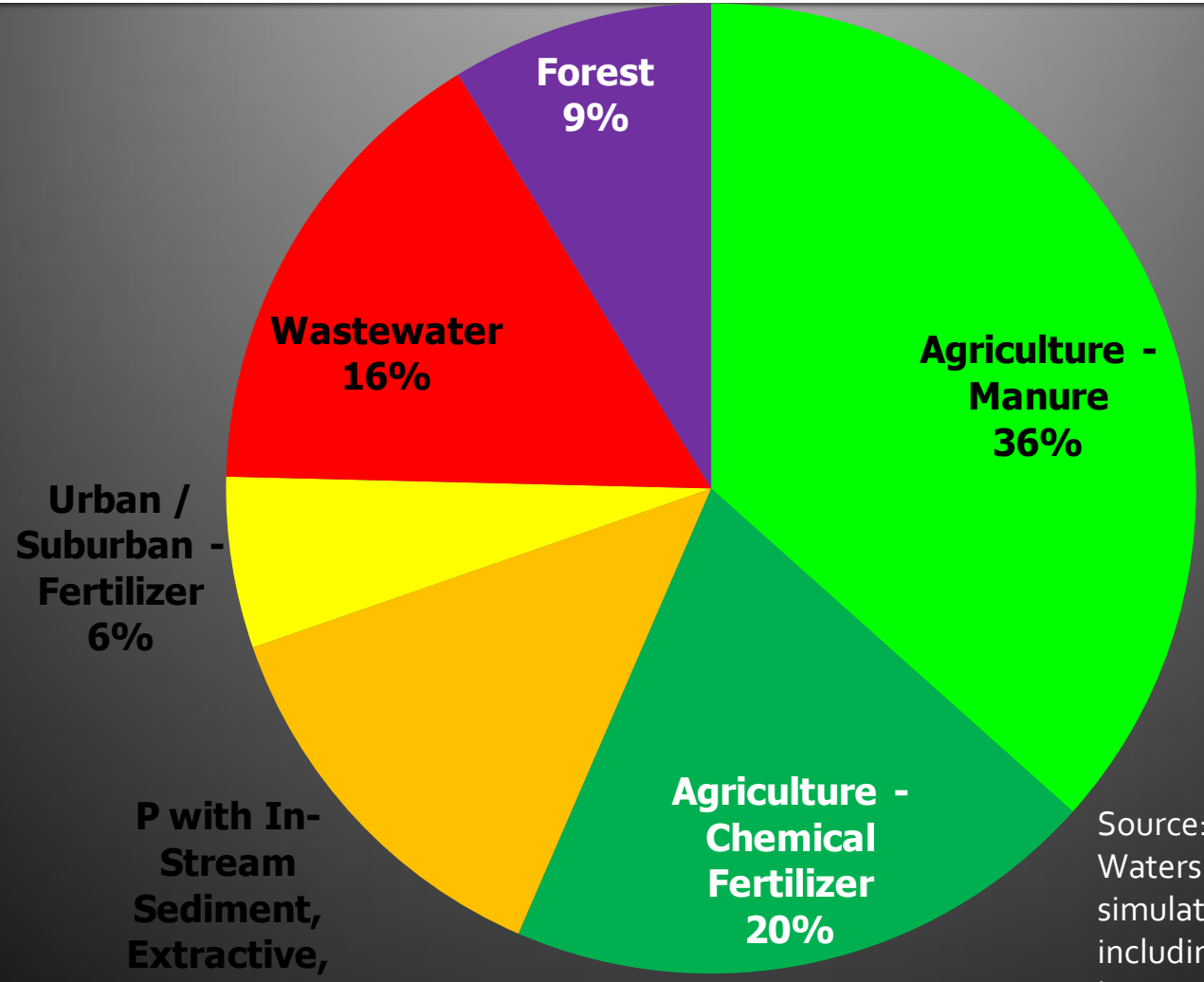
2012 Estimated



Source: CBP Phase 5.3.2 Watershed Model data and simulation for 2012 assessment including jurisdictional supplied inputs

Phosphorus Loads to the Chesapeake Bay

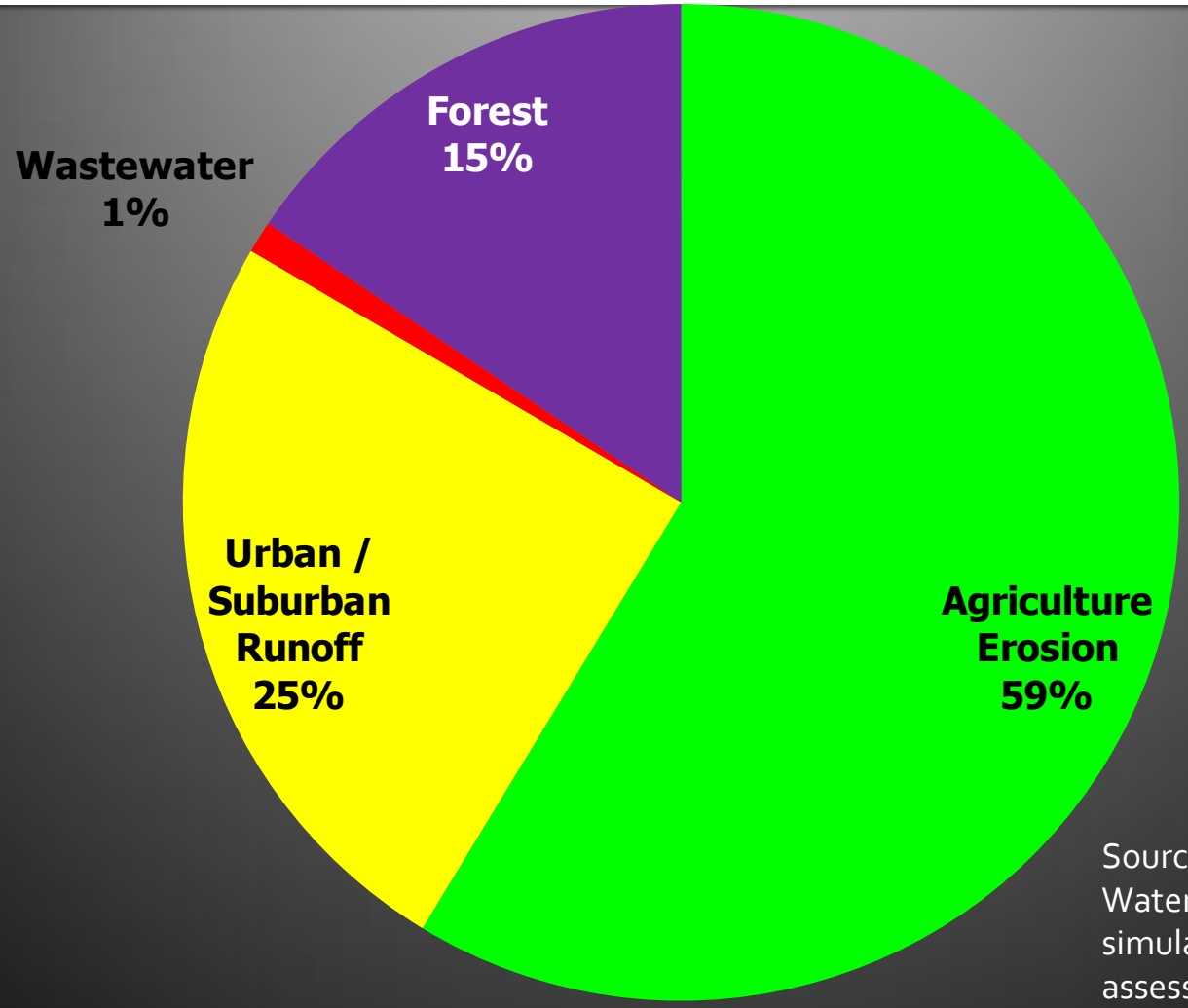
2012 Estimated



Source: CBP Phase 5.3.2 Watershed Model data and simulation for 2012 assessment including jurisdictional supplied inputs

Sediment Loads to the Chesapeake Bay

2012 Estimated



Source: CBP Phase 5.3.2 Watershed Model data and simulation for 2012 assessment including jurisdictional supplied inputs

Chesapeake Farms in 2007

- 1% of the national farm acreage
  - 3% of the animal units
  - 7% of the dairy cows
  - 10% of the poultry
- Average farm size: 153 Acres
  - National avg.: 418 acres

(http://www2.econ.iastate.edu/outreach/agriculture/periodicals/chartbook/Chartbook2/Tables/Table4.pdf)

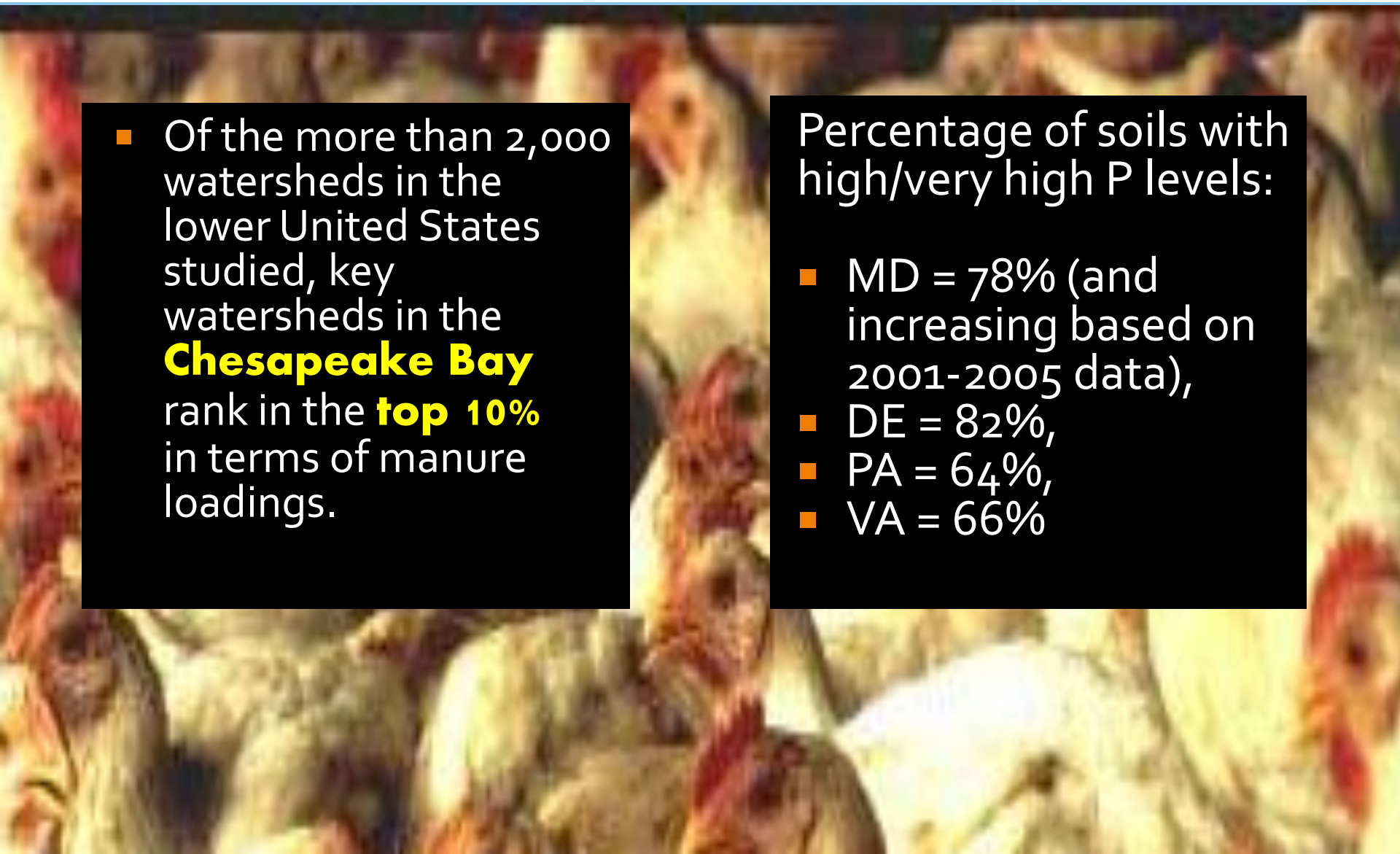
USDA-NRCS 2011: Assessment of the effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region

Compared to the Upper Mississippi River Basin, the Chesapeake Bay region has

- HIGHER annual precipitation (8" more/ year)
- HIGHER percentage of cropped acres with slopes greater than 2 percent (60 vs. 42 %)
- HIGHER percentage of cropped acres that are highly erodible land (44 % vs. 18 %)
- HIGHER percentage of cropped acres with soils prone to surface water runoff (23 vs. 13 %)
- HIGHER percentage of cropped acres with a "high" or "moderately high" soil leaching potential (46 vs. 9 %)
- HIGHER percentage of cropped acres with manure applied (38 vs. 18 %).

USDA-NRCS 2011: Assessment of the effects of Conservation Practices on Cultivated Cropland in the Chesapeake Bay Region

Manure facts compel action



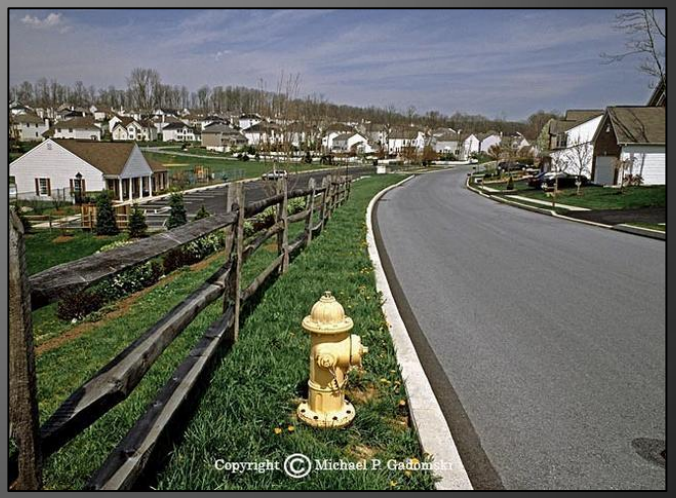
- Of the more than 2,000 watersheds in the lower United States studied, key watersheds in the **Chesapeake Bay** rank in the **top 10%** in terms of manure loadings.

Percentage of soils with high/very high P levels:

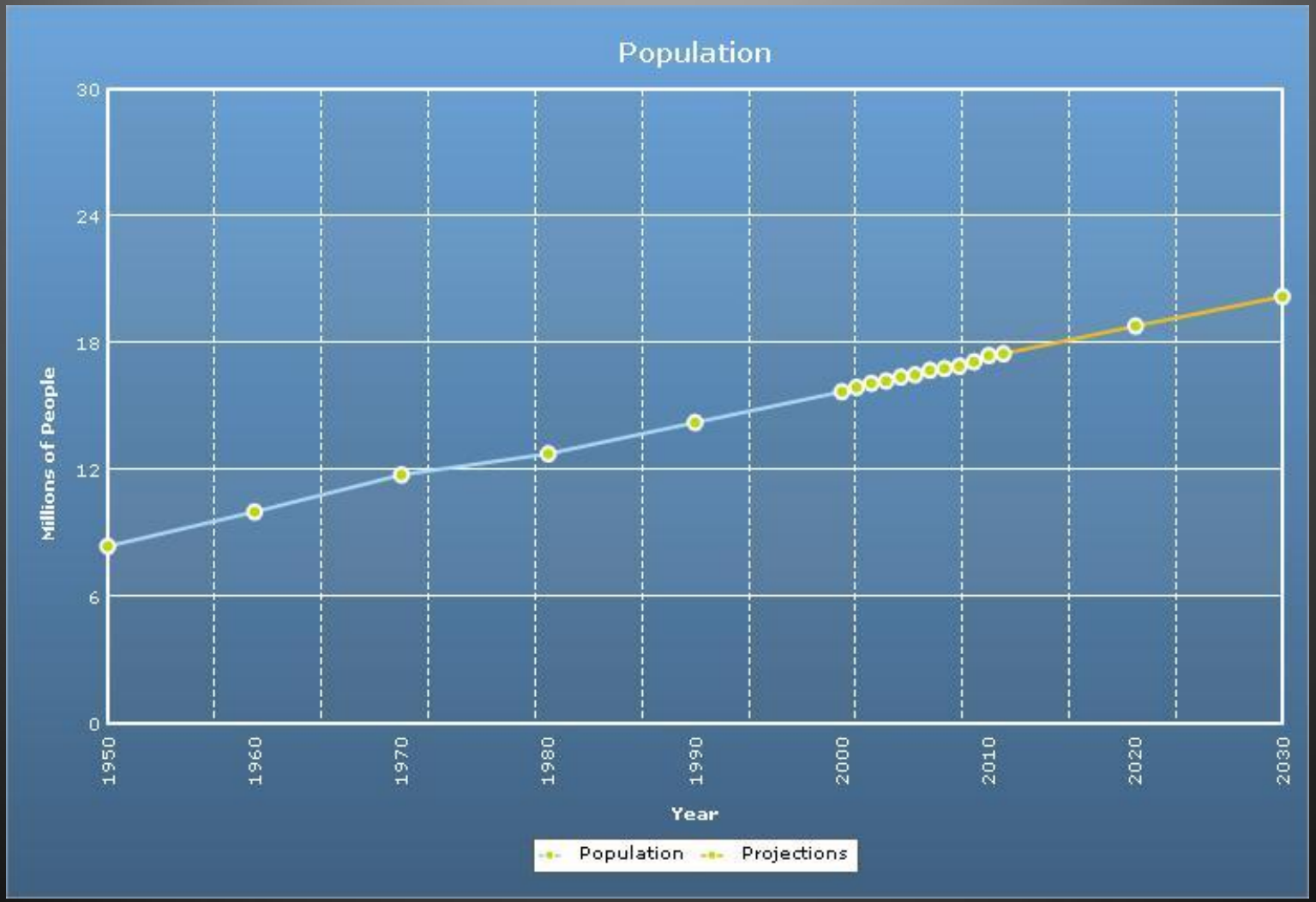
- MD = 78% (and increasing based on 2001-2005 data),
- DE = 82%,
- PA = 64%,
- VA = 66%

STORMWATER: Here's what we have…

- **State Programs:**
  - BRF, Stormwater Utility, 2010 Trust Fund
- **Innovation Grants**
- **Info Sharing**
  - CEF Financing Forums
  - LGAC conference for Local Officials
- **Trading**

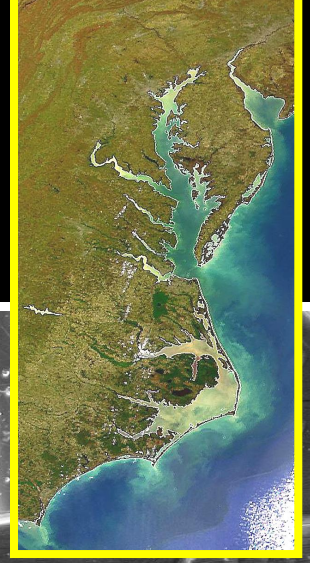


What more can we do?



Now its your turn:

Chesapeake Bay Commission



Policy for the Bay

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